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Crucial Win: Prowler Jamming System Upgrade

Grumman Aircraft Systems has solidified its role as the EA-6B electronic warfare systems integrator by winning a $7 million development contract to upgrade the EA-6B Prowler's tactical jamming system. The upgrade will consist of the development of a computer interface unit/encoder (CIU/E).

Winning this competitive contract is crucial to the Prowler's future at Grumman, says Dan O'Neill, EA-6B program vice president. "It assures us of continued control of the current Improved Capability Prowler (ICAP-II) version of the EA-6B and all updates of the present production Prowler."

"The importance of electronic warfare is growing rapidly. The services have been aware of the need and the industry has responded," says O'Niell. "As a manufacturer of primary weapons systems Grumman must maintain a prominent position in this fast evolving technology."

The Navy contract calls for Grumman and teammates Teledyne Systems Company and Comptek Research Incorporated to deliver the first preproduction CIU/E by next July. Grumman and Comptek will develop the computer programs for the CIU/E, while Teledyne will produce the hardware.

The CIU/E analyzes and groups the various radar signals that the EA-6B encounters on a mission. On today's Prowlers, this job is done by two separate units and the AYK-14 Central Mission Computer. After the CIU/E groups the radar signals, they can be identified and jammed.

The CIU/E will make the current Prowlers even better. "It will about double the current pulse processing capability," says Marty O'Connell, CIU/E program manager.

Development will continue through 1987 with production deliveries commencing in 1988. Eventual orders for the production units could total $18 million.

The next generation of Prowlers called Advanced Capability (ADVCAP) is being developed by Grumman and Litton. These EA-6Bs will be operational in the Nineties. Meanwhile, the ICAP-II is now rolling off the production line. ■

Keep 'Em Flying. *Grumman won a $7 million development contract to upgrade the EA-6B Prowler's tactical jamming system. The award is crucial to the Prowler's future at Grumman. 'It assures us of continued control of the current Improved Capability Prowler (ICAP-II) version of the EA-6B and all updates of the present production Prowler,' says Dan O'Neill, EA-6B program vice president.*

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Clear View For Greyhound. *Production of the 39 new C-2A Greyhounds for the U.S. Navy continues at Plant 4 in Bethpage. Meanwhile, at the Naval Air Test Center in Patuxent River (Md.), Navy pilots are giving the new Greyhound a workout before it joins the fleet next winter. See story on page 3.*

Computer System Designers Gathering Under One Roof

Grumman Data Systems has made a move to leave the driving to somebody else.

"We were so scattered," says Peter Goldsmith, assistant to the vice president-Technical Operations, "every time there was a meeting, everyone involved would have to get into a car to attend."

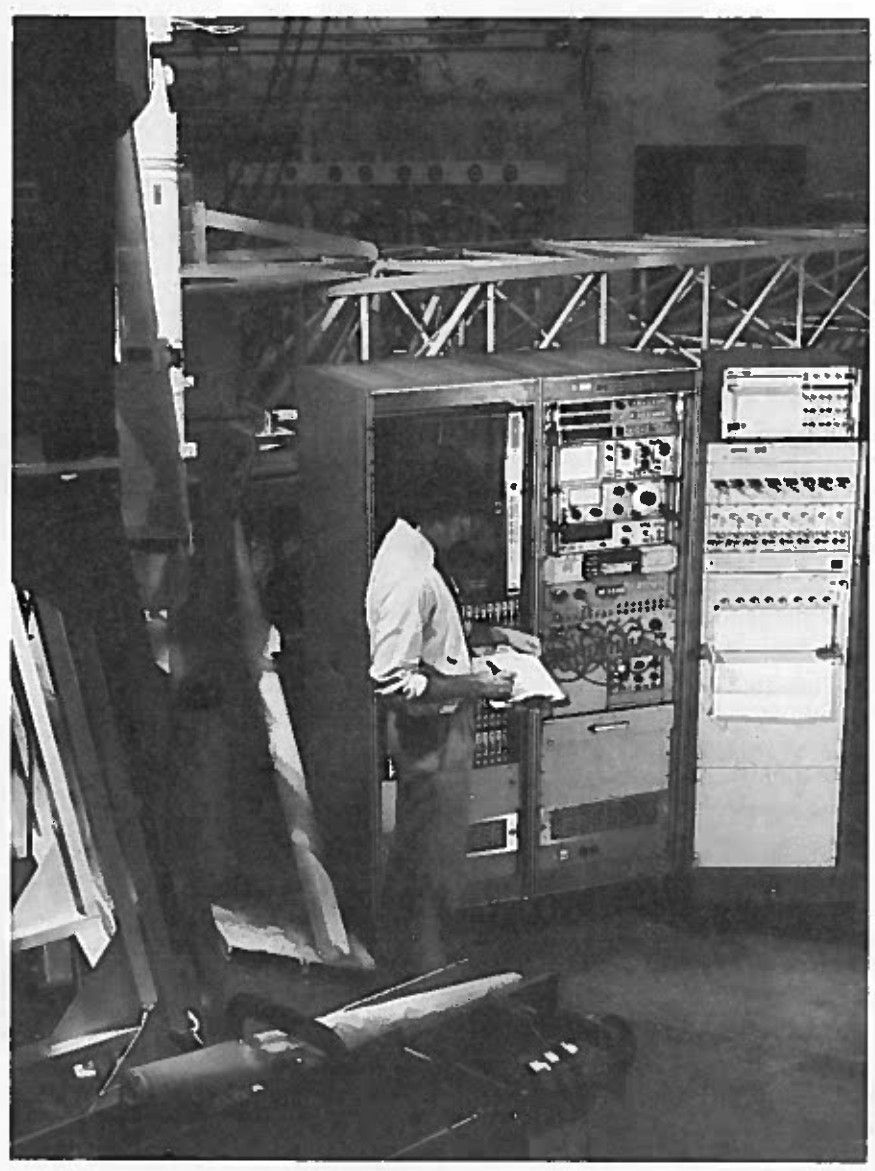
By the end of October, nearly 900 GDS people who work in the core business area – the development of computerized systems – will get into elevators to attend meetings. They will be housed on the top three floors of the new, four-story building, Plant 237, at 1000 Woodbury Road in Woodbury, Long Island. The upside down boat-shaped Gateways building is conspicuously visible just north of the Long Island Expressway near exit 44.

The first stage of the relocation took place on July 12. Gerry Sandler, vice president-Technical Operations, and his staff moved into new offices on the fourth floor of the Gateways building.

About the end of October, the remaining groups from Plant 242, plus the Purchasing, Contracts and the Planning, Control and Budgets people from Plants 45 and 46 – all located in the Crossways Park industrial complex in Woodbury – will move to the second floor of Plant 237.

At one point, GDS had people in eight buildings in the sprawling Crossways complex. After the move in October, that number will be reduced to five. The Grumman Data Systems Institute's classrooms and offices, the InfoConversion and Systems Maintenance Services facilities, and a few Grummanites in 20 Crossways Park West, will remain in the complex. ■

GDS On The Move. *By October, 900 Grumman Data Systems people who work on the development of new computer systems will be working at this new building at 1000 Woodbury Road.*



All In The Numbers. *Believe it or not, there's an F-14 wing hidden in this contraption. It's in the Plant 14 Flight Control Hydraulic Test Stand, more popularly known as the "Iron Monster." The stand reproduces the pushes and pulls and twists that the wing would undergo in flight. Above, Instrumentation engineer Mark Rausch monitors an analog tape recorder during testing of the Tomcat wing.*

Software Thieves Are Breaking The Law

The use of computers at Grumman is growing rapidly. At the same time, problems related to computer security are cropping up.

In addition to large computer mainframes, the company currently has more than 500 personal computers (PCs) in use. That number is increasing by about 300 a year.

One security problem peculiar to computers is the copying of seller-licensed software. Recent court decisions have awarded large settlements to software manufacturers who have had their copyrights infringed. "When an individual makes an illegal copy of seller-licensed software, they are breaking the law," warns Gerry Michael, manager-Office Automation.

"People sometimes think they're doing the company a favor when they make a copy for a co-worker or for their own home use. They see it as a shortcut to getting a project done faster or saving the company money. They're wrong. What they're doing is opening up Grumman and themselves to law suits," says Michael. "If someone needs a particular piece of software to do their job, the company will be more than happy to buy it."

For security information on mainframe or personal computers and word processors, call Office Automation at (516) 575-7555 or the Personal Computer Center at (516) 575-8100.

One Good Resume Can Equal A Holiday

Experienced engineers are in short supply. You can help Grumman fill its personnel needs – and get two extra vacation days.

The Aircraft Systems Division is offering two bonus vacation days to Grummanites who refer engineers to the company. The referred person must have three years experience, be hired in a critical skill area (flight test, integrated logistics support, research, engineering or manufacturing) and remain with the company at least six months.

Since March, Grumman has hired 10 engineers through the bonus referral program.

Referrals are valid only if directed through the Employment Office. Job shoppers, part-timers, co-op students, agency referrals, and new grads are not eligible for the bonus plan.

If you know an experienced engineer who would like to join the Grumman family, mail that person's resume to the Employment Office, mail station C07-GHQ. Include your name, plant, department, extension, and permanent number.

For further information, call Renee Cox, Ext. (111) 59385, or Peter Portanova, (111) 50683. ■

Personals

My sincerest thanks and appreciation to all my friends and co-workers at Grumman for their kind expressions of sympathy and support following the sudden loss of my mother. **Rich DeMasi**

My family and I wish to express our sincere appreciation to my friends, co-workers, and Field Operations for their kind expressions of sympathy during the recent loss of my wife Bundy. **Manny Morello**

My family and I wish to express our appreciation to all my friends, co-workers, and ESO for their kind expressions of sympathy during the recent loss of my mother. **Joe Crabbe**

We wish to thank all my friends and co-workers for their kindness. It was appreciated more than words can say. **Herbert J. Smith and Family**

I would like to thank all my friends and ESO for their kind support during my recent hospitalization and illness. **Jim Rogers**

My family and I wish to express our appreciation for the kindness and support offered during the recent loss of my mother. **Samuel Hirschhorn**

The family of Walter J. Saccareccia express their deepest thanks and appreciation to all their friends for their help and concern during my father's illness and passing. Walter had been a part of the Grumman family for 41 years before his retirement. **Thomas M. Saccareccia**

My family and I wish to express our sincere appreciation to Bob's friends and co-workers at Grumman. Your support during his illness and at the time of his passing will always be remembered. **Marilyn Cozzette**

This Greyhound Is No Bowwow

C-2A passes first round of tests at Pax River

PATUXENT RIVER, Maryland – At the Naval Air Test Center here, Navy pilots are giving the reprocured C-2A Greyhound a workout before it joins the fleet next winter.

The flight tests, conducted at this remote base on the Chesapeake Bay, began last month on C-2A aircraft number 20 and will continue on C-2A number 21.

C-2A Greyhounds are carrier on-board delivery (COD) aircraft. These planes are the Navy's lifelines, transporting supplies and personnel to carriers at sea. The twin-turboprop Greyhounds boast the largest payload capacity of any COD aircraft in the world.

Grumman is manufacturing 39 Greyhounds under the Navy's first-ever multiyear aircraft procurement contract. Nineteen earlier C-2As were built by Grumman from 1965 through 1968. The new C-2A version features many improvements over the earlier Greyhounds including more powerful engines, better reliability, an advanced navigation and communication system, and expanded cargo capacity.

Outfitted with special instrumentation, Greyhound number 20, has been flown to check carrier suitability and flight dynamics. Aircraft number 21, which will arrive in Pax River shortly, will be evaluated for avionics integration and electromagnetic compatibility (EMC) tests.

Much of aircraft 20's flight test regimen has been tailored to evaluate performance under conditions at sea. "It's a pretty standard series of flight tests," says Joe Kudirka, E-2/C-2 flight test project engineer. "We've been aiming for two flights a day."

In addition to Kudirka, two technical people, and two instrumentation specialists from Bethpage have been here in Pax River for the test program. Grumman C-2A Project Pilot Dave Seeman has participated in the carrier suitability tests.

"The Navy is conducting the tests. We're here just to help monitor the results, and to provide additional support," says Kudirka. "We also preflight the Greyhound after a day in the air for the next day's work."

One of the more dramatic carrier suitability tests to be conducted so far was the arrestment test. In a carrier landing, a Navy aircraft only travels a short distance on the deck before its tailhook catches an arrestment cable, which brakes the plane.

To simulate shipboard conditions, a cable was strung across a runway at Patuxent River. The C-2 took off for a short flight, circled, approached, and hooked up to the arrestment cable. The plane was then towed to the side of the runway, where technicians checked for discrepancies.

"This test checked the effects of arrestments on the plane's avionics," says Kudirka. No discrepancies were found.

The Greyhound was flown into the cable at different descent rates to simulate carrier landings under slower and faster approaches and maximum load conditions.

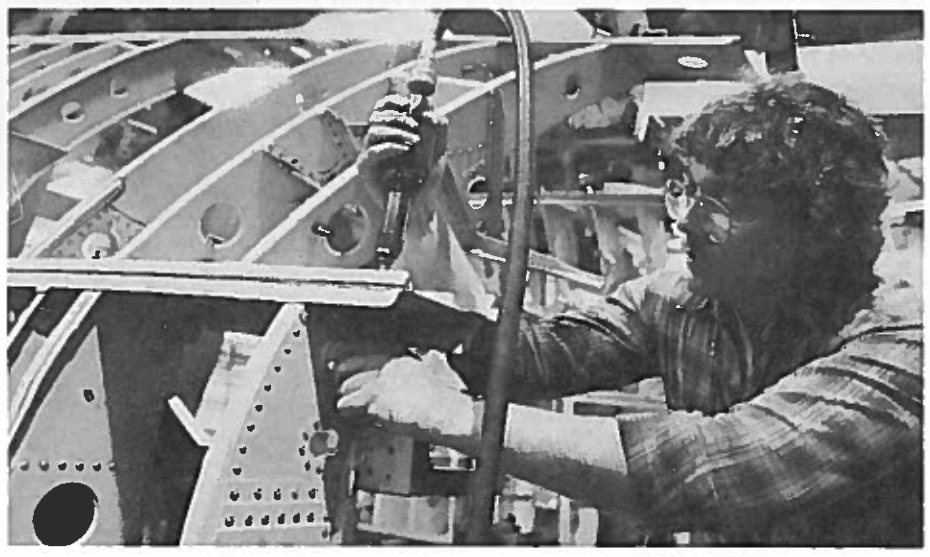
"The pilots also came in at varying yaw and bank angles, to simulate different approach angles to the cable," says Kudirka.

The Greyhound also passed the catapult test, which utilizes an apparatus similar to what's aboard an aircraft carrier. Beneath one of Pax River's runways is a steam generator that powers a shuttle. The shuttle moves along a track on the runway, grasping a launch bar mounted on the aircraft's nose. At 140 knots, the shuttle lets go, launching the plane.

"The idea is to get the aircraft up to speed in a very limited amount of space," says Kudirka.

The initial round of tests on aircraft 20 was conducted without a test boom, a distinctive long tube connected to the C-2's nose. The boom contains precision instruments and provides valuable air data during a test flight – such as angle of attack and air speed. It will be used for the balance of the flight dynamic tests.

The first stop for aircraft 21 at Patuxent River will be the anechoic chamber, where it will undergo tempest testing. These tests check an electronic system's ability to resist interference from various external electrical pulses. ■



A Riveting Experience. *Senior Assembler-Riveter Robert Farrell rivets a Greyhound major subassembly in Plant 1.*

Built In Toughness. *Grumman's C-2A Greyhound is the Navy's carrier on-board delivery (COD) workhorse. The job requires a tough airplane and teamwork like that of Joe Prophet (L) and Kevin Steward (R), riveters on the C-2A assembly line.*

Grumman System Is Cable Ready

Grumman Electronics Systems has entered the cable television business. It recently sold a Grumman-designed and built Automatic Insertion System to Estrella Communications, a Spanish language television station located in Glen Dale, California.

The $55,000 contract is for an "electronics only package," that will control video tape machines the station already has at the station's studio. The system includes a computer and a machine/computer interface, as well as all the necessary software and holding racks. It was designed and built at Great River Operations (L.I.).

The computer is programmed to decide which videotape machines should be on at a given time. The system automatically plays prerecorded programs and commercials for the television station. It can run programming by itself for a full seven days. The system can be expanded to control up to 53 weeks of complete programming.

The system can also be tied into an existing automatic sales and bill-paying computer network. This will enable the station to automatically bill advertisers and pay salesman's commissions as commercials are run.

"The system is already getting a lot of attention in the industry," says Scott Schaire, engineering manager-Software.

"The Estrella contract is for just one station. This system was designed with a much larger market in mind," he says. "It can handle multiple station programming – the kind used by the 6,400 cable systems currently operating. That's a very large and very attractive market and we're hoping to tap that market." ■

Once Is Not Enough

In order to bring you more news about what's happening in our changing company, *Grumman World* will now be published twice a month.

The newspaper is for all Grumman employees and retirees. We welcome your ideas and suggestions – this is your company and this newspaper is for you.

Obituaries

Edgar Pearson, ILS Mechanical Equipment Engineering, Plant 25, died August 3 at the age of 65. He had been with the company since 1967 and resided at 13 Renison Dr., Westbury, N.Y.

Eugene M. Hof, OP Product & Staff, Plant GHQ, died August 16 at the age of 59. He had been with the company since 1965 and resided at 159 Deer Lake Dr., No. Babylon, N.Y.

Albert J. Kadlec, Parts Paint, Plant 2, died August 20 at the age of 65. He had been with the company since 1963 and resided at 476 2nd Ave., Bayport, N.Y.

Carpool

Port Jefferson to Bethpage: Ride sharing, one or two people sought, 7 a.m. to 3:30 schedule, nonsmokers please. Ray Corwin, Ext. (111) 51657 or (516) 473-6760.

Security Clearances Cut Back To Follow DoD Order

At the direction of the Department of Defense, Grumman is cutting back on employee security clearances by 10 percent throughout the company.

The number of people holding each level of clearance – confidential, secret, top secret – will be cut by 10 percent. The reduction will be complete by mid-October.

The move follows Defense Secretary Caspar Weinberger's decision to reduce clearances within DoD and the defense industry. Secretary Weinberger aims to eliminate what has been described as a serious national security vulnerability.

"The several recent instances of espionage committed by U.S. citizens against our nation have highlighted the need for increased awareness," said Grumman President George Skurla in a recent letter mailed to all Grummanites.

Greater attention to security is essential at Grumman, "because the products we build and the advanced developments we're involved with are of great interest to foreign intelligence agents," said Skurla. A "Security and You" booklet accompanied Skurla's letter.

Harry Volz, deputy director of Security and Corporate Services, notes that those who require a confidential, secret, or top secret clearance to do their job will certainly retain it. "However, up until very recently, Grumman issued a confidential level security clearance to all new employees," says Volz. "This will no longer be the case. You must now be certified by your supervisor to obtain a confidential clearance."

All existing clearances and pending requests for clearance are being reviewed by Corporate Security with the individual managers and supervisors.

New identification badges will be issued to those Grummanites whose levels of access authorization change. The background color on your badge signifies your clearance level. It's dark blue if you have no clearance, red if you do.

Volz points out that even when people are cleared they do not have carte blanche access to information at that level of classification. They still must have a "need to know" – the data must be necessary to the performance of their work.

In virtually all cases, those affected haven't worked recently with classified data. Restoring a clearance later on, if necessary for your job, will be easy. ■

Stopping Security Leaks. *Recent cases of espionage have prompted the Department of Defense to have all defense contractors review their employee security clearances. Existing security clearances at Grumman are being reviewed by Corporate Security. Some Grummanites may receive new ID badges.*

Army To Use Grumman Design Tool For ATE Development

Grumman Electronics Systems has won a $2.5 million contract to supply management tools that will help the Army design and develop test program sets – the programs that make computerized automatic test equipment work.

The initial award is from the Army's Communications and Electronics Command (CECOM).

"We have been working for years putting together tools for the same purpose here at Automatic Test Equipment (ATE) Systems," says Charlie Esposito, Army Test Program Set Support Environment (ATSE) program manager. According to Esposito, the program has the potential to become an ongoing effort worth several million dollars a year.

The whole automatic test equipment industry has grown rapidly in recent years. Once, GIs could keep their gear working in combat with a little moxie and lots of ingenuity. Today, weapons are heavily electronic. A computer is needed to run diagnostic tests to tell a technician which circuit card in the weapon system went bad and what part caused the problem. And there must be a computer program for each and every piece of equipment that will be tested.

What ATSE will do is help the Army come up with the most efficient test program sets for each piece of hardware that must be tested. It will also help find the most cost effective way of writing these programs.

ATE Systems will deliver ATSE in two parts. The first will be delivered in 20 months; the second in three years. After that, Grumman will support the Army ATSE effort for the following three to four years.

Data Systems' Ada Lab in Woodbury, Long Island, will contribute to the ATSE effort. The lab is a proving ground for Grumman applications of the Ada programming language, the standard computer language for military systems.

Grumman will be working with CECOM's Test, Measuring and Diagnostic Equipment unit at Ft. Monmouth, New Jersey. ■

Attention: Class of '86

Applications for 1986 Grumman Science and Engineering Scholarships will soon be available to all Grumman sons and daughters who are high school seniors.

The scholarship competition is open to students who have shown an interest in an engineering career and have excelled in such studies as science, math and computers.

Each year, Grumman awards a minimum of 12 scholarships. In 1986, the company will increase its yearly grant to $5,500 per student. Approximately half of the scholarships go to sons and daughters of Grummanites all over the country; the remainder to Long Island high school seniors.

For more information, contact the Scholarship Office, (516) 575-2682, or Ext. (111) 52682. Applications are also available in Field Base Administration Offices across the country, and at high school guidance offices on Long Island. ■

Grumman Boats Unveils New Flagship

On September 12, Grumman Boats unveiled 14 additions to its fleet of recreation and fishing boats at IMTEC, the marine industry's big trade show in Chicago. Leading the Grumman flotilla was the fleet's new flagship, the 18-foot inboard/outboard Skidaddle GSX 184 I – Grumman's first production boat with a factory-installed motor.

"With our new models, we are filling all the voids we've had in our line," says Grumman Boats sales manager Don Allen. "Our dealers had asked for new models and we are listening to them."

Grumman has also added new color schemes and bright new graphic designs to all its boats for the 1986 season.

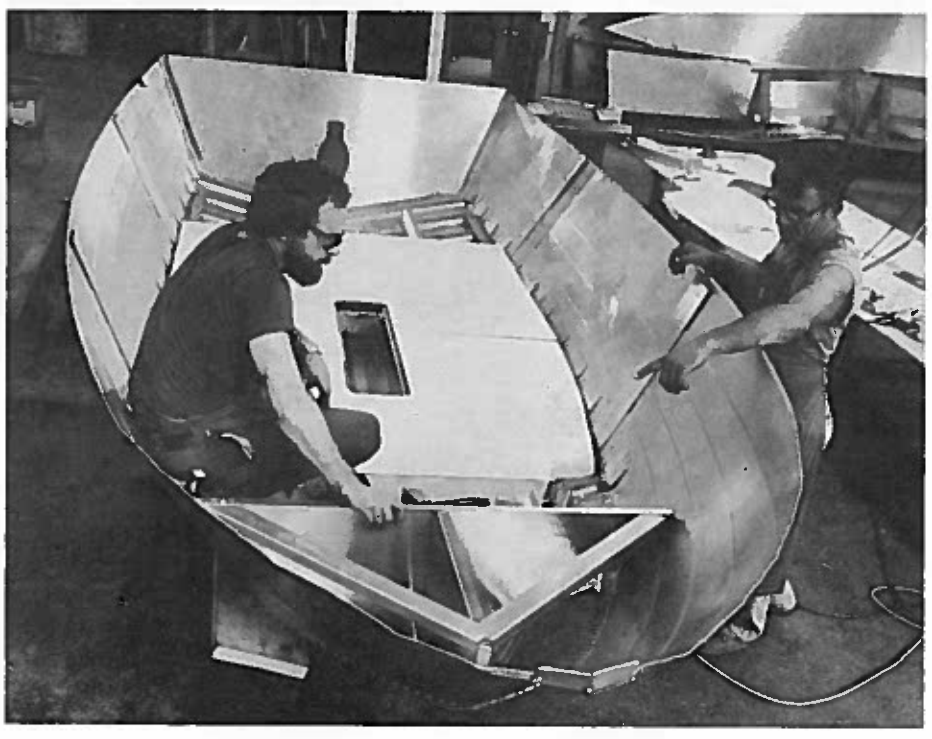
The new 18-foot Skidaddle is designed for sport boating, water skiing and fishing. The standard engine has 120 horsepower; an optional 140 horsepower engine is available. The Skidaddle seats six, and there's a padded storage area in the bow. Grumman is also offering an optional pedestal-mounted swivel seat in the bow for the serious fisherman.

In addition to the Skidaddle inboard/outboard, Grumman's new line includes a Skidaddle outboard, new 16- and 18-foot Super Fishermen, two bass boats, four modified vee-hulled Jon boats, two intermediate vee boats and two fishing boats.

"Overall," says Allen, "we are going to have better market penetration with these new additions."

While the market for canoes has been flat over the past few years, sales of Grumman boats are rising. "We planned to build 9,000 this year, but we'll probably produce close to 11,000," Allen says. That figure would be double the 1984 production. Grumman boats and canoes are built in Arkadelphia, Arkansas, Corcoran, California, and Marathon, New York.

"We've had slight price increases for some of our boats," he says. "Other prices have remained the same." The suggested retail price of the new Skidaddle inboard/outboard has been set at $9714 for the 120 horsepower version. ■



Work Aweigh. *Foreman Charlie Rink (R) and Dick Burt worked feverishly in Marathon (N.Y.) to get this aluminum, 18-foot Skidaddle inboard/outboard finished in time for the its debut at the marine industry's big trade show in Chicago September 12.*

Future E-2C Hawkeye Radar Gets Workout At Pax River

PATUXENT RIVER, Maryland – This summer, the U.S. Navy put the E-2C Hawkeye through a rigorous flight schedule here to evaluate a prototype radar system.

The tests began in July and finished last month. They were run at the Naval Air Test Center on this isolated peninsula at the point where the Patuxent and Potomac Rivers meet the Chesapeake Bay. The radar will go into production in 1987.

With its distinctive 24-foot diameter rotating radome and 10,000 pounds of sophisticated electronic equipment, the E-2C is the Navy's all-weather Airborne Early Warning (AEW) aircraft. Today's E-2C Hawkeye can monitor three million cubic miles of air space – automatically detecting, identifying, and tracking enemy aircraft over both land and sea.

"The total result of the ongoing development program will be to provide significant improvements in the radar's ability to operate in electromagnetic interference environments, and also dramatically increase its capacity – both in search volume and target quantity," says Larry Michelon, program manager for the two-part E-2C Update Development Program. The two-part program began in 1979 and extends through 1988, and the current flight tests mark the finish of the program's first leg – development of the Group 1 radar hardware.

The radar is being upgraded in two phases, each with a separate development and test cycle for hardware and software. The Group 1 software will be flight tested next summer.

"The Group 1 radar upgrade is a major engineering change proposal," says Jerry Norton, deputy engineering manager for E-2 Development. Norton heads a 15-member Grumman team that's at "Pax" River for the tests. "Flight testing is just one of the necessary hurdles for making such a change to a Navy aircraft."

The Group 1 radar, known as APS-139, will boost the E-2C's anti-jamming and ship surveillance capabilities. The Group 2 radar (APS-145) will increase its overland performance and will increase its onboard computing power sixteenfold.

This last improvement is possible because of smaller electronic parts. Just as today's small computer can perform the same functions as its room-sized predecessor, more electronics can now be packed into the same amount of space aboard the Hawkeye.

"Using the old radar, you would saturate the capacity of the on-board computer by employing just one-quarter of the E-2C's search capability," says Michelon. "But the old system was all that could be stuffed into the plane's interior, due to size constraints. Now, we can pack a lot more capabilities into the same aircraft."

The new APS-139 radar also offers improved signal processing and target tracking. Signal processing makes it easier to collect radar information in high EMI (electromagnetic interference) areas. EMI refers to interference from virtually any device that emits radio signals, and is a factor that's generally increasing in the hostile environment that the Hawkeye operates in.

At Pax River, E-2C test flights are conducted twice a day, six days a week. Two separate tests are being run by the Navy – one of each every day except Sunday. Development tests assess whether the radar system meets design specifications, while operational tests determine its suitability to the day-to-day needs of the fleet.

"This is the last step before a system goes into production," says Lt. Cdr. Buzz Shelley of VAW-124 at Pax River. "In this particular round of tests, we're still dealing with pre-production hardware. There are always going to be some discrepancies.

"We are still 'peaking and tweaking' the system – finding ways to make it work better," adds Shelley, "which could mean both software and hardware changes."

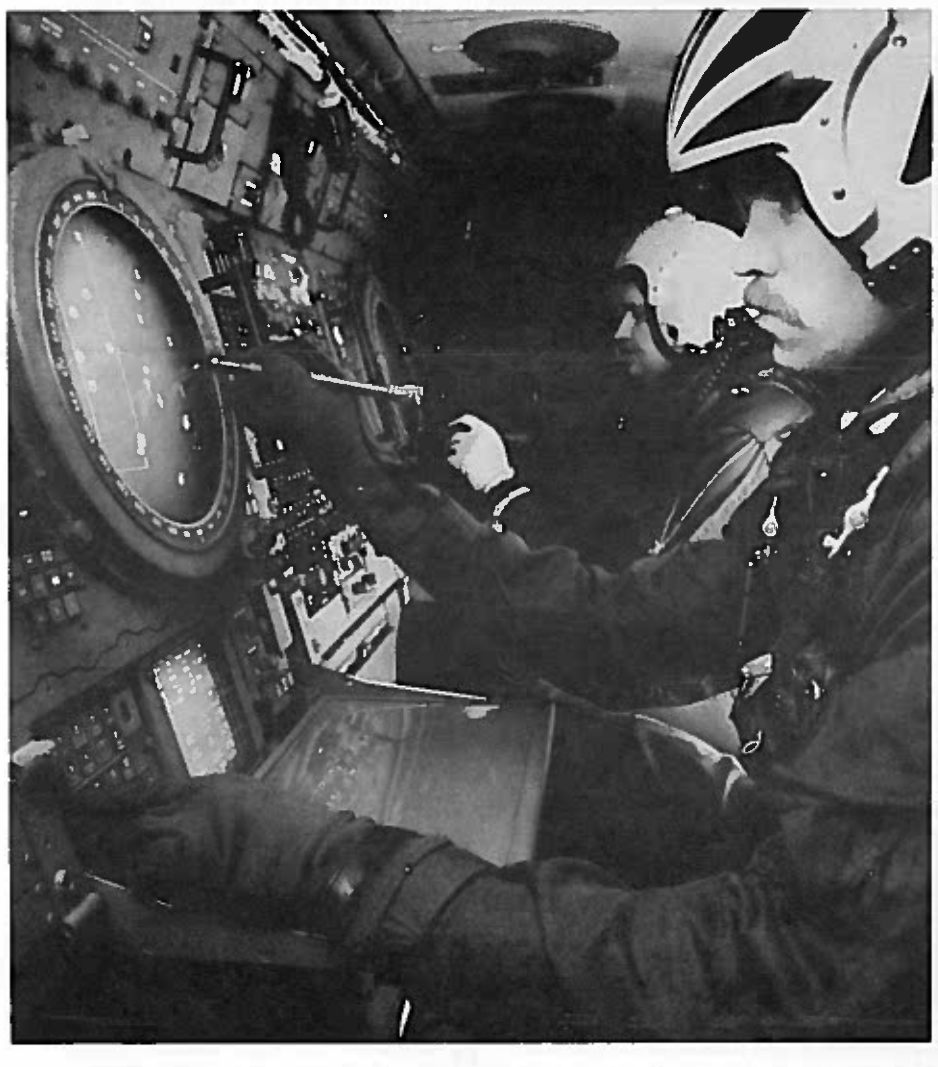
Each flight lasts between four and five hours at altitudes up to 30,000 feet. "The plane is flying about a ton over normal weight," notes Lt. Mark Smith, Anti-Submarine Aircraft Test Directorate, who is an E-2C weapon system officer and assistant project officer on the Navy teams. "That's because it has been outfitted with video equipment, still cameras, computers, and instrumentation for data recording and analysis."

"It's unusual that both sets of tests are happening at the same time," Smith adds. "Since two completely separate Navy groups conduct these tests, it's rare when their testing schedules coincide."

Among the many phenomena being analyzed is mutual interference – whether new electronic black boxes will interfere with existing ones.

The Grumman people on-site included flight test engineers, pilots, weapon systems officers, design analysts, and computer systems analysts. The bulk of the flying was done by Navy pilots, however. The Grummanites were on hand to help the two teams gather, check, analyze, and interpret reams of data from each flight – and help solve problems that cropped up. ■

High Over Pax. *A Navy E-2C flies over the Naval Air Test Center in Patuxent River, Maryland. This summer, the Navy flight tested the first part of the Hawkeye's radar update.*



Blips And Scopes. *In the rear cabin of an E-2C, Navy system operators monitor the Hawkeye's radar in flight. The already-sophisticated E-2C radar is being significantly improved in a two-part Update Development Program currently underway.*

GDS Institute Begins Office Automation Classes

The first students in Grumman Data Systems Institute's (GDSI) new Office Automation program began classes on September 4.

GDSI unveiled the Office Automation program last year. The first class has 13 students and is being conducted at the Institute's Woodbury (L.I.) campus. GDSI plans to begin another class in January at its Bohemia campus.

"Today's workplace needs word processing people who are familiar with office equipment," says George Capua, GDSI president. "The public school system is really not able to satisfy that need."

So GDSI developed this 800-hour long program, which costs each student $4,495. Students begin by learning keyboarding, then go on to study word processing, business office machines, recordkeeping and accounting and eight other subjects. Completion of the course qualifies students for entry level positions.

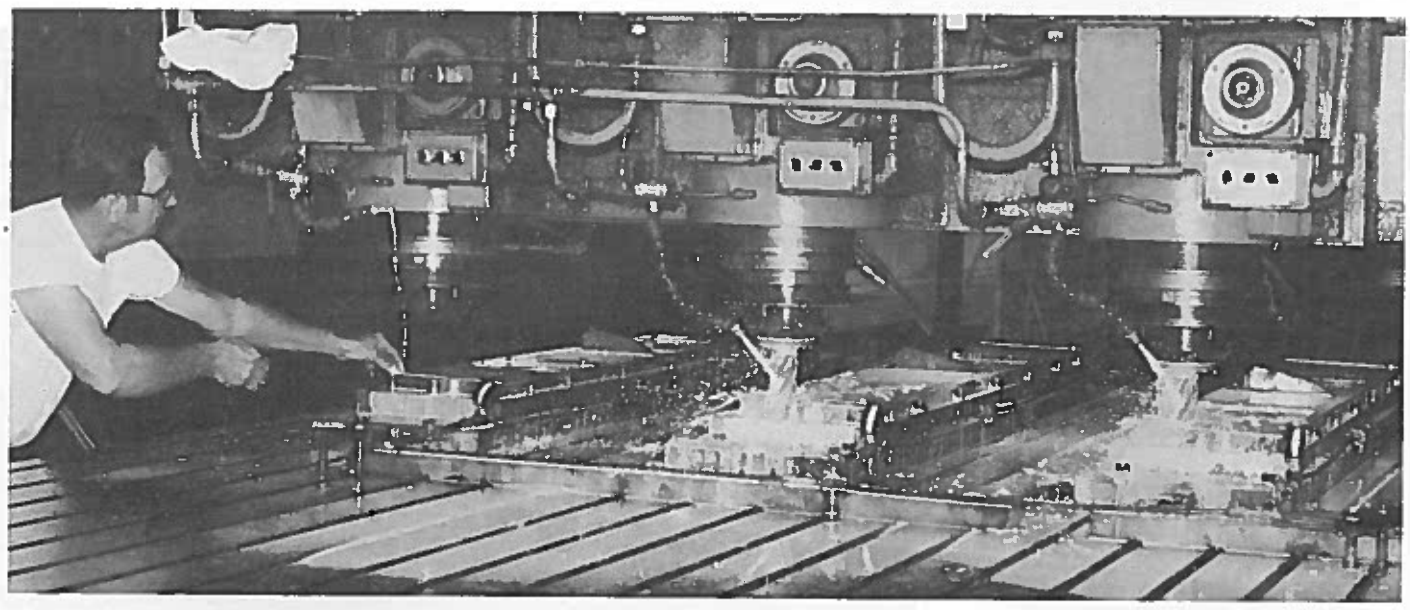
GDSI has been offering training courses to the general public, mostly on Long Island, since 1970. It is best known for training people in computer-related fields such as programming, electronics technology and systems analysis. In addition to its two Long Island campuses, GDSI has one in West Newton, Massachusetts, a Boston suburb. ■

Waiting For State Approval

Grumman Data Systems Institute is waiting for approval of its Computer-Aided Design/Drafting (CAD/D) curriculum from the New York State Education Department.

Approval would mean that GDSI could begin marketing this 1260-hour course. It is designed to prepare young men and women for entry-level jobs as CAD draftsmen.

The Institute is now giving a three-week CAD/D seminar based on this career-training program to professional architects, engineers and draftsmen on Long Island.



The Right Connection. *Clarence Townsley inspects an F-14 landing gear part being made on the Cincinnati three-axis bridge mill. The huge mill is hooked up with the new DNC system at Glen Arm, Md.*

Glen Arm Plugs Into DNC Network

When the whistle blows at Grumman's Glen Arm, Maryland plant the morning of September 16, it will signal not only the beginning of a new work day, but the start-up of its new distributed numerical control (DNC) system.

The 275 people who work at Glen Arm have a specialty: precision milling and machining raw metals into aerospace parts and structures. These ultimately go into all of Grumman's aircraft. The plant also produces a variety of structures under subcontracts with Boeing, Martin Marietta, and Alcoa.

Housed in a stylish new building, DNC will bring a new level of sophistication to what is already one of Grumman's most modern operations.

Though it seems almost like a contradiction in terms, "distributed numerical control" entails wiring multiple machines into one control computer. Computing power and functions are distributed from the main computer to each workstation.

The DNC network will eventually involve 92 machines at Glen Arm and Bethpage when it is completed five years from now. It represents a $25 million capital expenditure.

Considering the benefits, that's money well spent. "The DNC network will increase productivity by making better use of people and equipment," says John Otterstedt, Glen Arm's plant manager. "It will be much faster and will eliminate the errors inherent in Glen Arm's present tape-based NC system.

"There are other benefits," continues Otterstedt. "DNC will give us more accurate data on cutting time, the length of an operation, the jobs completed, and the time spent on a job by an operator."

The first two machines at Glen Arm to join the DNC network will be the Onsrud three-axis skin mill and the Cincinnati T-10 machining center. Also to be added to the DNC network by year's end are two Forest Line profile machines.

All in all, the DNC network will eventually encompass 70 machines at Glen Arm and 22 at Bethpage. Machines will be added gradually – hence the five year timeframe.

Most of the machines at Glen Arm are now either "NC" (numerical control) or "CNC" (computer numerical control). An NC machine runs a mylar tape with punched holes that look a bit like Braille. They're actually a code that tells the machine how to do each job.

For each job there is a separate tape, and tapes must be punched beforehand. More recent equipment is CNC. These machines have their own computers and job routines are contained on diskettes.

To cite an example of where DNC will result in time and cost savings: mylar tapes have to be remade each time there was a minor change in a production process. This takes about four hours. "With DNC, it's almost a matter of minutes to edit a job specification," says Ken Dull, deputy project manager for DNC in Bethpage.

Another benefit is two-way communication. Job instructions are fed to the workstation level, and operators can communicate their needs instantly to the DNC center.

"For security purposes, there will be levels of access programmed into the DNC system," says Otterstedt.

"The programmer who enters a job is the only one who can change the basic specs. The methods engineer can make some changes – such as making the program available to be run on another machine. The operator can access the info but not change it."

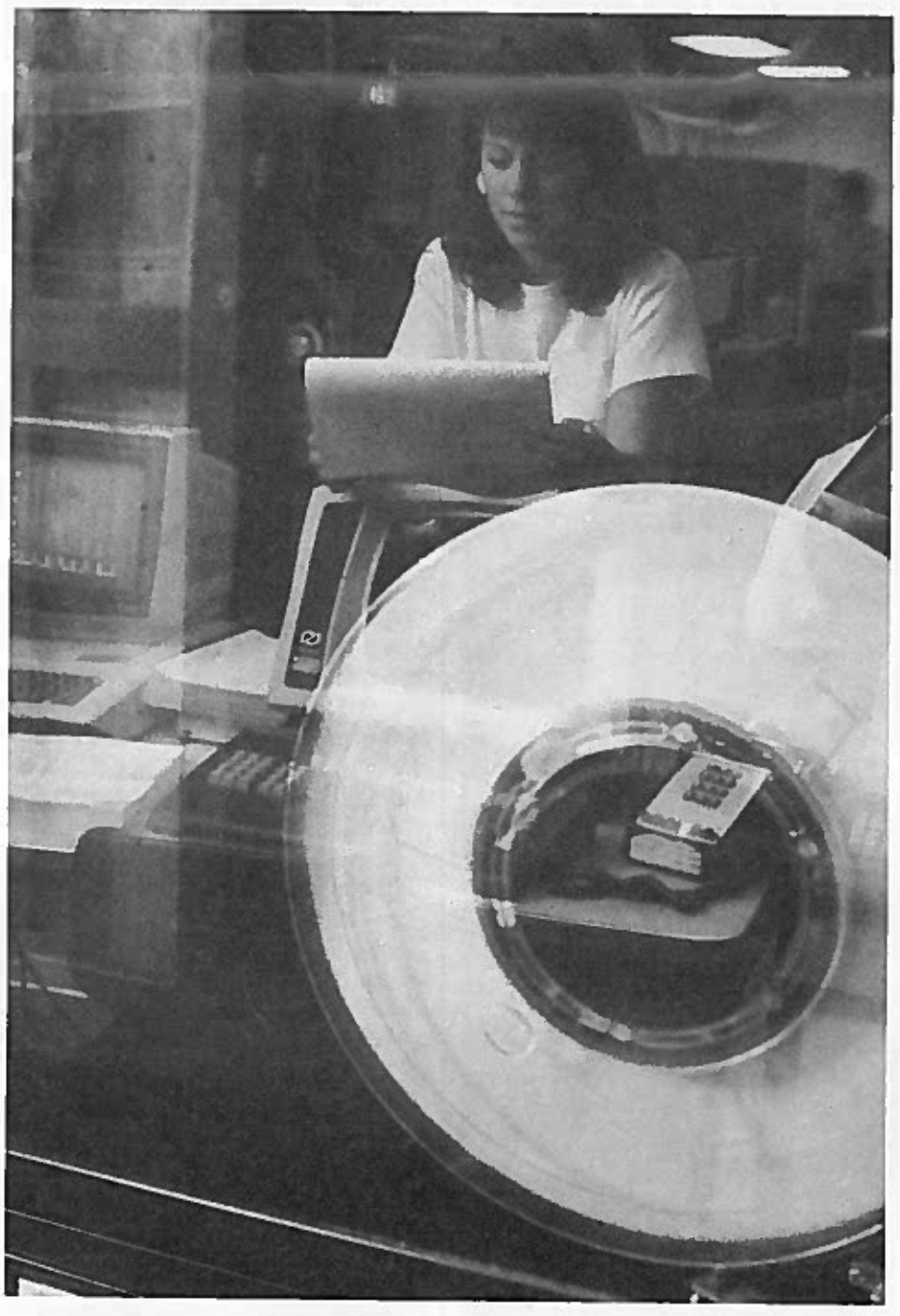
About 20 people have already moved into Glen Arm's new 8,000-square-foot DNC building. It is on the north side of Long Green Pike and adjoins the newer of Glen Arm's two manufacturing plants. Computer cabling runs under the street.

Glen Arm's DNC system will be directly linked with the main DNC system in Bethpage, which takes up a large room in the Plant 3 trailers. Dull notes that Glen Arm's and Bethpage's DNC systems are virtually identical. "We developed it, tested it, and proved it out here," he says. "What is getting installed at Glen Arm is a copy."

The DNC system is set up so that it can be easily connected with as many other computers throughout Grumman as necessary.

One such computer is the Cost Tracking System, which went into operation at Bethpage last year. Grummanites run an electronic "wand" across the magnetic stripe on the back of their badge when reporting to or leaving work. Similarly, he or she runs the wand across a stripe on each work order upon finishing a job, plus his or her badge. This way, a record is made of the job, the person who did it, and the time it took, enabling accurate job charges and cost estimating.

"DNC will help the company maintain its competitive edge," adds Otterstedt. "It shows we're serious about investing in the future." ■



Reflections Of The Heart. *At the heart of the Grumman's distributed numerical control system are large mainframe computers which manage machinery all over Bethpage and Glen Arm. Reflected in the glass panel (above) is Debbie Moles, computer operator for the DNC center in Bethpage.*

Retirees

On behalf of our fellow workers, Grumman World salutes the following Grummanites for their contributions to the company and wishes them well in their retirement. Those who have recently retired are:

Raymond J. Kirchner (20), Ralph B. Nelson (40), Doris W. Bolton (77), Loretta Smith (1), Albert C. Morrison (5), Jerome W. Barlow (4), Kenneth F. Williams (6), Haig A. Manoogian (5), Joseph Russak (5), James C. Shroads (GHQ), Edward Schmidt (25), Russell J. Stupia (77), Nathaniel G. Thomas (55), John H. Twinem (2), Baldo Vasile (3), William D. Wilson (5), Winifred N. Bacchus (43), Hava M. Ciccolini (GHQ), Andrew J. Hejnas (Wh. 9), Arthur Kenger (25), Annette C. Lisa (GHQ), Gardner B. Lorimer (8), Donald R. Wagner (3).

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Grumman Deposits $15,000 in L.I. Cares' Food Bank

The Grumman Employee Contribution Council (ECC) recently presented a $15,000 check to Long Island Cares, a non-profit anti-hunger organization.

The money will be used by Long Island Cares to renovate an additional food storage warehouse. The one the group now uses, on the grounds of Pilgrim State Hospital in Brentwood, is fast running out of space.

Long Island Cares was founded by the late folksinger Harry Chapin to fight hunger on Long Island. Chapin reasoned that Americans could never solve the global hunger problem without first eradicating it at home.

There are about 350,000 hungry people on Long Island: elderly people on fixed incomes, infants and children, the unemployed, the poor, the sick, and illegal aliens.

Much of Long Island Cares' efforts are in food reclamation, or "gleaning," projects. About one-fifth of America's food supply goes to waste, and food banks have sprung up nationwide to channel this resource to the needy.

Long Island Cares established its Food Bank in 1982. It receives donations of food from churches, supermarket chains, food producers, clubs' food drives, and concerned individuals. The food goes out to over 100 community groups that operate nutrition programs.

The Pilgrim warehouse has boxes of food piled from floor to ceiling. Mike Schaefer, donations manager, points to a crate of mislabeled baby food as just one of the many items rescued from waste. "The labels had the wrong bar codes on them, so they couldn't go through the scanners," he says. "It's perfectly good baby food, but unusable as far as the retailer is concerned. We work with stores to get this food before it gets tossed out."

Terry Surbeck, reclamation project coordinator, says: "The second warehouse became especially necessary since we recently entered agreements with two large retailers. We will be getting damaged – but usable – canned goods by the truckload."

Long Island Cares helps local organizations get soup kitchens and emergency food distribution centers started and provides much of the food they require. Food banking coordinates distribution among diverse, spread-out community agencies. Less food is wasted, and charitable agencies' costs are reduced.

Among the local agencies supported by Long Island Cares are the Interdenominational Nutrition Program, which has soup kitchens in Hempstead, Long Beach, Islip, and Yaphank, and Meals-On-Wheels.

Long Island Cares also runs two farmers markets, a co-op market, and the local U.S.D.A. Needy Family program (the government's surplus food distribution effort). The group has a budget of about $300,000 for '85, which it expects to double by next year.

"We're always grateful for corporate support," says Surbeck. "The $15,000 donated by Grumman will help us increase our storage space and reach more hungry people on Long Island. ■

Stacking The Odds Against Hunger. *A warehouse is being renovated at Long Island's Pilgrim State Hospital with $15,000 donated by Grumman to Long Island Cares, a non-profit anti-hunger organization. The warehouse will be used to expand the agency's Food Bank and in its food reclamation projects.*

NASA Awards Contract, Citations For Grumman Flight Test Innovation

NASA's Langley Research Center in Hampton, Virginia, will be utilizing Grumman's patented Flight Deflection Measurement System (FDMS) for future wind tunnel tests. NASA recently awarded Grumman a study contract for the application of the FDMS to its Langley spin tunnel.

NASA also presented a special Certificate of Recognition to the system's developers, Flight Test Instrumentation engineers Robert Fodale and Herbert Hampton, and to the system's inventor, former Grummanite Herbert Seymour.

Under the new contract, NASA will use the FDMS in the Langley spin tunnel where scale models of different aircraft are studied for flight characteristics. The spin tunnel is a three story high, silo-shaped structure with a powerful fan at the top.

The FDMS measures deflections, or bending, in aircraft structures, such as wings. "FDMS is not a brand new earth-shattering invention. We've been using it in flight tests since 1977," says Hampton, manager of Instrumentation System Design. "However, it is a very versatile tool that has proven quite valuable in obtaining certain flight test data not available from any other sources."

FDMS has been used extensively at NASA-Dryden Flight Research Facility in California on a number of flight research programs, including the X-29, F-15, AFTI/F-111, and the HiMAT remotely piloted research vehicle.

The system uses small light emitting diodes (LED) mounted on the airplane's wing and fuselage. The diodes, known as targets, emit infrared (IR) light in a timed sequence that is picked up by receivers located on the plane's fuselage. The data signals are then relayed to a ground station via radio telemetry for processing and analysis.

"Over the years, the system has brought in more than $750,000 worth of business for Grumman and this latest study contract could well open up further business opportunities. It's exciting to see the system continue to develop and to find new applications," says Hampton.

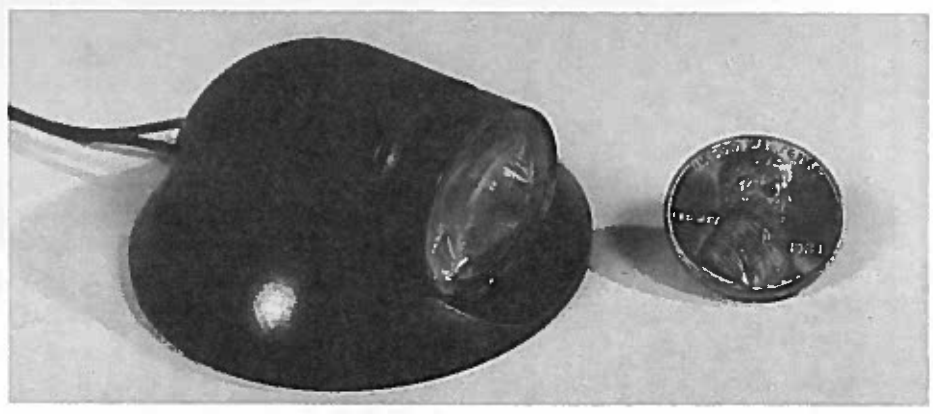
Previously, the only test data available from the spin tunnel came from studying high speed motion picture film one frame at a time.

"Using Grumman's FDMS will greatly increase the amount, and accuracy of the information from the spin tunnel tests and make the whole testing process more efficient," says George Gayes, manager, Grumman Flight Test Special Programs.

A number of recent improvements in the system have expanded its capabilities. In early flight tests, the FDMS required that the surface on which the LED targets lights were mounted be painted black to eliminate background (IR) light interference, such as city lights, sunshine or cloud reflections. A new circuit has been installed that automatically filters any background IR, eliminating the need for the black paint.

The effective range of the system has been improved by over 300 percent, primarily due to the new circuit. FDMS can now measure structures over 80 feet in length – larger than the half-wingspan of a B-1 bomber.

"The proven accuracy of FDMS and its newly expanded capabilities has attracted a good deal of interest throughout the industry," says Gayes. "There may even be some applications for the system in space work – such as measuring the deflections or positions of large constructions like the space station." ■



Enlightening Innovation. *(above) Flight Test Instrumentation engineers Robert Fodale (L) and Herbert Hampton (R) received NASA citations for their work on the Flight Deflection Measurement System. The system uses tiny, eye like, light emitting diods (below) to measure bending in aircraft structures.*

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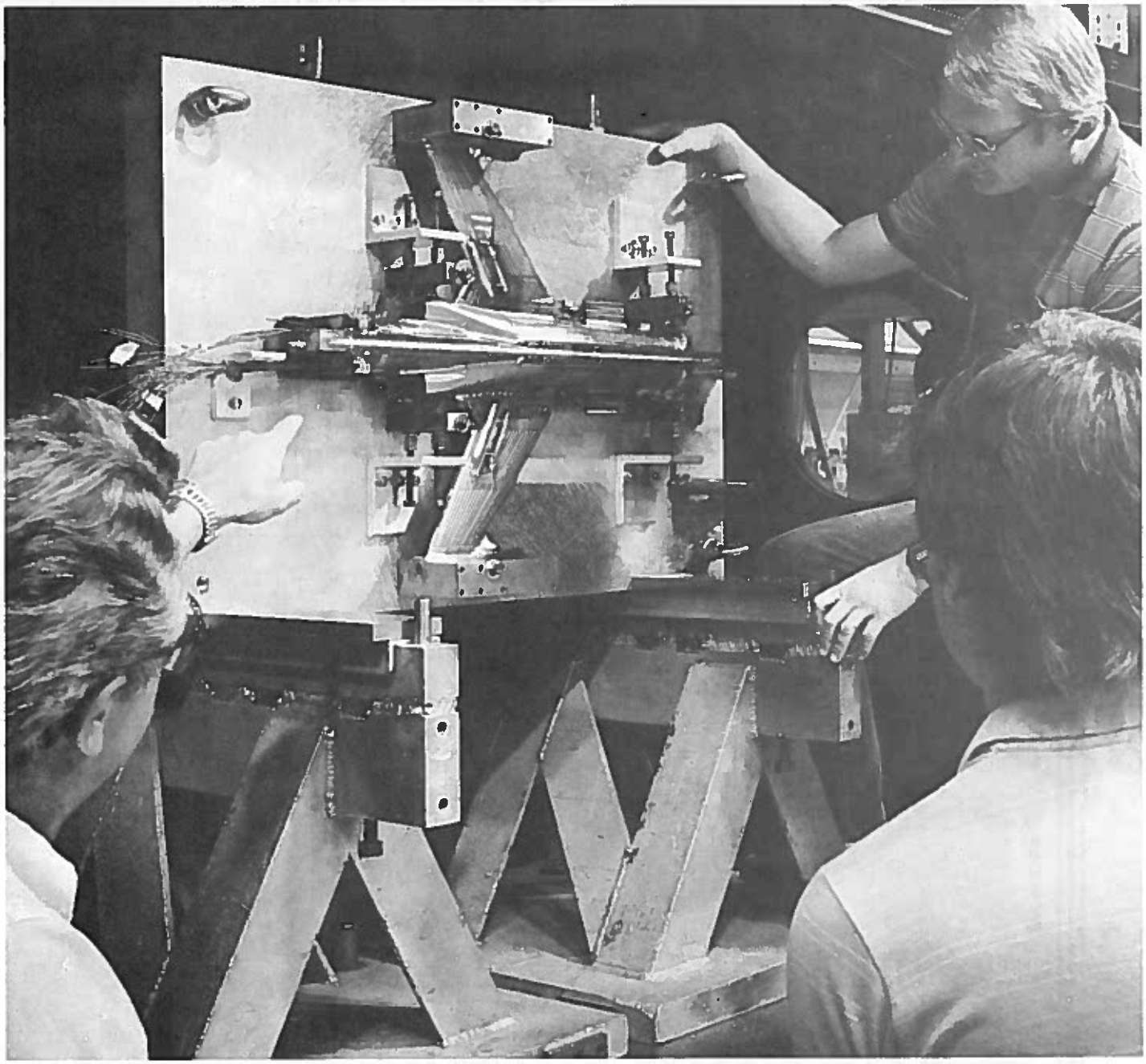

Mighty Mite X-29

The Grumman Model Shop is building this steel X-29 model for tests in the new National Transonic Facility wind tunnel at NASA Langley, Virginia. Above, electron beam welder Tony Zlocki (rear), and welding engineer Frank Pelkowski (L) and inspector William Billings, prepare the mini X-29 for electron beam welding in Bethpage. When completed, the model will be tested at up to 1.2 times the speed of sound at minus 300 degrees Fahrenheit in a nitrogen atmosphere. Grumman engineers hope to correlate the real X-29 flight test information with the wind tunnel findings to produce mathematical formulas that can be used in future tests in conventional wind tunnels.

Letters

Dear Grumman World,
The article "The Third World And Our Future" by O.S. Williams in the July 26 issue has prompted my response.

The article correctly states that new technology itself is not enough, and after decades of poor planning and buying, many Third World nations are heavily in debt. The reason for this is restrictive, dictatorial Marxist governments which prevent any efficient use of resources. The epitome of this is Ethiopia. Though having some of the richest soil in the world, thousands of Ethiopians are starving. It is a standard communist technique to control a country's food, and to starve out the opposition. Giving these Marxist satrapies capital will at best do nothing and at worst build up an enemy . . . .

Which African countries have successful economics? Those with free markets. The Ivory Coast, with a per capita income 10 times that of Zaire. South Africa, with the highest general standard of living in all Africa. Each year a half a million people strive to get into South Africa to take advantage of their prosperous economy. This precipitated building fences to stem the *influx* of workers into South Africa, thereby maintaining the standard of living. This fact is ignored in the liberal press . . . .

The Western and Eastern bloc commitments to the various bad forms of government in Africa are making it a continental-scale welfare ghetto on international food stamps. And it's proving as unsuccessful there as it is here in raising the standard of living. The only way, of course, to raise the standard of living is to increase production, something very difficult to do under a no-incentive system.

We are not interdependent on these countries, nor do we owe them anything. By selling (giving) to them we are only strengthening our enemies and keeping them in power. I am reminded of a statement by Lenin. When asked where will we get this long rope to hang the capitalists, he replied, "The capitalists will sell it to us."

John Michael Heermans
Pt. Mugu, California

I readily agree with J.M. Heermans' comments as to the cruel record of Ethiopia's Marxist government in impeding aid flow to its people, but I must take exception to his misinterpretation of what my article was all about. In no way did it suggest that our prosperity is the cause of Third World poverty. In fact, it cites "decades of poor planning and buying beyond their means." Nor was the approach in any way altruistic. To the contrary, my carefully non-political article had United States' enlightened self-interest as its central theme. It said, "Third World nations with healthy and productive economies are indeed our best customers . . . Trade, not aid, is becoming the new slogan of enlightenment." I was clearly talking about customers, *not welfare recipients. I'm alarmed at signs that this growing market will be satisfied, not by U.S. exports, but by manufactured products from Europe, the Far East, and form such new competitors as Brazil and India . . . .*

O.S. Williams
Vice President-Africa
Grumman International

Let Us Know

We don't want to do all the talking.

We'd like to know what you think about the things you see in these pages, and what you see going on in the company. Serious comments, questions and complaints are welcome, and will be answered by the people most qualified to respond. We'll get back to you promptly with their replies. If the topic is of general interest, we'll print it.

Letters to the editor should be addressed to Grumman World, 1111 Stewart Avenue, A22-111, Bethpage, N.Y. 11714, and should include your name and address. Letters may be edited for clarity or space.

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